Green Chemistry and Sustainable Engineering 101 Workshop

October 25, 2012

EDC Auditorium, 5050 Anthony Wayne Drive
Wayne State University, Detroit, MI

This half-day workshop will provide attendees an understanding on basic principles of green chemistry and sustainable engineering. Participants will gain knowledge and information on basic techniques, resources, tools and also on how these are applied in industry, research, and teaching. This is an interactive workshop to gain knowledge and exchange ideas in this emerging area of sustainability.

Who should attend?

Engineers, chemists, environmental/health/safety staff, research and development staff, teachers, and students who are not familiar with the principles of green chemistry and sustainable engineering should attend this workshop.

Agenda

1:30 – 2:15pm	Introduction to Green Chemistry and Engineering Presenter: Dr. Sudhakar Reddy, University of Michigan
2:15 – 3:00pm	Sustainable Assessment: Metrics, Techniques, and Applications Presenter: Prof. Yinlun Huang, Wayne State University
3:00 – 3:15pm	Break
3:15 – 4:00pm	Life Cycle Assessment for Holistic Design Presenter: Dr. Rich Helling, Dow Chemical
4:15 – 5:00pm	Supply Chain Sustainability Presenter: Prof. Ratna Chinnam, Wayne State University

Registration

Registration fee: $50 ($15 for student), covering workshop materials and refreshments. Register Here!

Parking Information

Parking is available in the Visitor's Parking Structure # 2 ($6)

Contact

For more information, contact **Dr. Yinlun Huang**, Wayne State University at yhuang@wayne.edu or **Dr. Sudhakar Reddy**, University of Michigan at redv@umich.edu.

Don't forget to register for the 2012 Michigan Green Chemistry and Engineering Conference (http://www.michigan.gov/greenup), taking place the next day at Wayne State University!

Short Description of Presentations

Introduction to Green Chemistry and Engineering
Sudhakar Reddy, University of Michigan

Green Chemistry, known as sustainable chemistry, is the design of chemical processes that reduce or eliminate the use and generation of hazardous materials. The growing need for greener, more sustainable technologies leading economic development opened up opportunities to explore new methodologies in industry, public organizations and higher educational institutions. Basic principles of Green Chemistry and Engineering will be outlined. Examples of Green Chemistry principles and their applications in the teaching and research laboratories will be discussed. Some award winning examples from the Presidential Green Chemistry Challenge Awards Program will be presented.

Sustainability Assessment: Metrics, Techniques, and Applications
Yinlun Huang, Wayne State University

Industries are facing tremendous challenges due to increased pressures attributed to industrial globalization, energy depletion, resource scarcity, stricter environmental regulations, social responsibility compliance, and the need for technology advances. Thus, it is of imperative importance that the next-generation engineers are equipped with necessary knowledge of engineering sustainability and are capable of analyzing industrial systems, assessing system sustainability, and developing solutions for sustainability improvement. This lecture will introduce basic concepts of triple-bottom-line-based sustainability, discuss widely-used sustainability metrics systems, describe basic techniques for selecting and using those appropriate metrics, and demonstrate some simple application examples.

Life Cycle Assessment for Holistic Design
Rich Helling, Dow Chemical

Holistic design takes a broad, life-cycle view that considers how products and services fit within the world. Holistic design helps us to understand more thoroughly the environmental advantages of our products, to avoid unintended consequences or burden shifting, and to design products that can be successful in a world of diminishing resources and increasing expectations from society. Life cycle assessment is the quantitative methodology that enables holistic design and other decisions to be made with better understand of the potential impacts during the life cycle of a product or process. This seminar will describe the context, methods, issues and opportunities for life cycle assessment.

Supply Chain Sustainability
Ratna Chinnam, Wayne State University

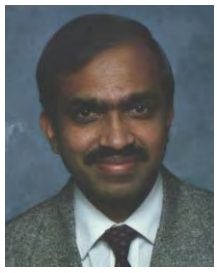
Supply chain sustainability is the management of environmental, social and economic impacts, and the encouragement of good governance practices, throughout the lifecycles of goods and services. Supply chain sustainability is increasingly recognized as a key component of corporate responsibility. Sustainability in the supply chain is increasingly seen among high-level executives as essential to delivering long-term profitability and is supplanting monetary cost, value, and speed as the dominant topic of discussion among purchasing and supply professionals. This workshop will offer a few baseline definitions and practical steps that companies can take toward progress.

Presenters' Profile

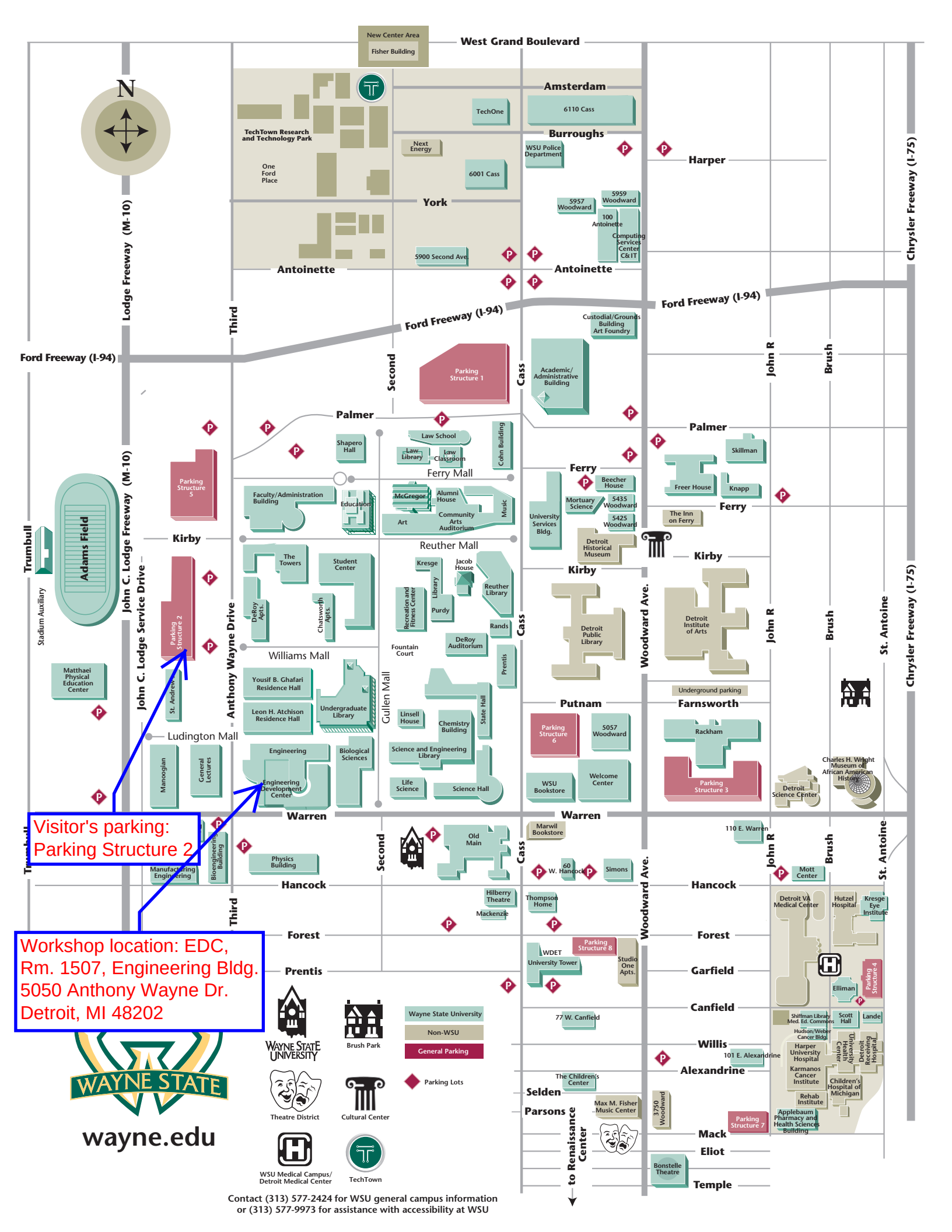
Dr. Ratna B. Chinnam is Professor of Industrial and Systems Engineering at Wayne State University. He is the author of over 100 technical publications with research interests in supply chain management and sustainability. His past research is funded by NSF, DoT, DoD, and VA. He collaborated with such companies as Ford Motor Company and General Dynamics, and consulted for such companies as Chrysler, Sirius Satellite Radio, Energy Conversion Devices, and Tecton. He graduated 15 doctoral students and is awarded the 2012 Outstanding Graduate Mentor Award. He is the founding Director of the Global Executive PhD Track at Wayne State, the first such engineering track in the U.S. He is a member of Alpha Pi Mu, the Institute for Operations Research and Management Science (INFORMS), and the North American Manufacturing Research Institute (NAMRI).

Dr. Rich Helling is Associate Director of Sustainability/Life Cycle Assessment (LCA) for The Dow Chemical Company, located in Midland, Michigan. He advises Dow businesses on the use of LCA and related tools to identify opportunities for innovation, differentiate products in the marketplace and create sustainable value for Dow. He has been with Dow for 25 years, in a variety of technical and managerial roles in R&D, Manufacturing and Sustainability, and has been based in Michigan, California and France. Dr. Helling holds a bachelors' degree from Harvey Mudd College with majors in Engineering and History, a masters' degree in Chemical Engineering Practice from MIT, and a doctorate in Chemical Engineering, also from MIT. He is a LCA Certified Professional.

Dr. Yinlun Huang is Professor of Chemical Engineering and Materials Science and Co-Director of the Sustainable Engineering Graduate Certificate Program at Wayne State University. His main research areas include engineering sustainability and integrated material, product and process systems engineering. He has published widely, and delivered numerous invited speeches in academia and industries and at national and international conferences. He has received many honors, including the AIChE Research Excellence in Sustainable Engineering Award in 2010, the Michigan Green Chemistry Governor's Award in 2009, and the Fulbright Scholar Award in 2008. Dr. Huang is currently serving as the Director for the NSF project, "Sustainable Manufacturing Advances in Research and Technology (SMART) Coordination Network," which involves 21 universities and 11 industrial organizations and university centers.



Dr. Sudhakar G. Reddy obtained his Ph.D. in Analytical Chemistry in 1980 from National Chemical Laboratory, India and moved to Utah State University as a NASA post-doctoral fellow. After holding various positions he joined the University of Michigan in 1994. As a Sustainability Coordinator, Dr. Reddy has developed and executed several sustainable programs to benefit UM community. Sustainable Lab Certification program is one among them that received great attention across the campus. His passion is green chemistry and compassion is sustainability. Dr. Reddy is working with various schools and colleges on campus to promote green chemistry and introduce pollution prevention initiatives to achieve ambitious goals set by the UM President Mary Sue Coleman. Dr. Reddy has published about 30 papers and presented many invited lectures on varied topics.



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